

CLAIMS

We Claim:

1. A method of delivering a therapeutic agent to a selected site within an organism, comprising the steps of:
  - identifying the selected site for delivering the therapeutic agent;
  - selecting a catheter comprising a tubular section having a solid section and a microporous membrane section;
  - placing the catheter in the organism so that the diffusion section is placed at the selected site;
  - coupling the catheter to a pump for delivering the therapeutic agent to the selected site; and
  - actuating the pump to deliver the therapeutic agent to the selected site.
2. The method as recited in claim 1, wherein the catheter microporous membrane section further comprises, a first end and a second end, the first end and second end coupled to the solid section forming a continuous cross section of the tubular section.
3. The method as recited in claim 1, wherein the catheter solid tubular section comprises a radio opaque material.
4. The method of claim 1, wherein the pump is an implantable pump.
5. The method of claim 1, wherein the pump is an external pump.
6. A method of delivering a therapeutic agent to selected sites within an organism, comprising the steps of:
  - identifying the selected sites for delivering the therapeutic agent;

selecting at least two catheters comprising a tubular section having a solid section and a microporous membrane section;  
 placing the catheters in the organism so that the diffusion sections are located at the selected sites;  
 connecting each catheter proximal end to a manifold,  
 coupling the manifold to a pump for delivering the therapeutic agent to the selected sites; and  
 actuating the pump to deliver the therapeutic agent to the selected sites.

7. The method as recited in claim 6, wherein the catheter microporous membrane section further comprises, a first end and a second end, the first end and second end coupled to the solid section forming a continuous cross section of the tubular section.
8. The method as recited in claim 6, wherein the catheter solid tubular section comprises a radio opaque material.
9. The method of claim 6, wherein the pump is an implantable pump.
10. The method of claim 6, wherein the pump is an external pump.
11. A method of delivering a therapeutic agent to selected sites within an organism, comprising the steps of:

identifying the selected sites for delivering the therapeutic agent;  
 selecting a catheter having a solid section and at least two diffusion sections, the diffusion sections longitudinally aligned from the distal end corresponding to the selected sites;  
 placing the catheter in the organism so that the diffusion sections are placed at the selected sites;

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coupling the catheter to a pump for delivering the therapeutic agent to the selected sites; and

actuating the pump to deliver the therapeutic agent to the selected sites.

12. The method as recited in claim 11, wherein the catheter diffusion sections are microporous membrane sections.
13. The method as recited in claim 12, wherein the catheter diffusion sections further comprise, a first end and a second end, the first end and second end coupled to the solid section forming a continuous cross section of the tubular section.
14. The method as recited in claim 11, wherein the catheter solid tubular section comprises a radio opaque material.
15. The method as recited in claim 11, wherein the catheter tubular section further comprises, an outer tubular wall and an inner tubular wall, the outer tubular wall having at least one opening within the diffusion sections though to the inner tubular wall, the inner tubular wall lined with a microporous membrane.
16. The method as recited in claim 15, wherein the catheter microporous membrane is located at the diffusion sections.
17. The method as recited in claim 15, wherein the catheter microporous membrane further comprises, an outer area and an inner area, the outer area having an interference fit with the inner tubular wall.
18. The method as recited in claim 16, wherein the catheter microporous membrane further comprises, an outer area and an inner area, the outer area having an interference fit with the inner tubular wall.
19. The method of claim 11, wherein the pump is an implantable pump.

20. The method of claim 11, wherein the pump is an external pump.
21. A method of delivering a therapeutic agent to selected sites within an organism, comprising the steps of:
- identifying the selected sites for delivering the therapeutic agent;
  - selecting at least two catheters each catheter comprising a tubular section having a solid section and a diffusion area, and an outer tubular wall and an inner tubular wall, the outer tubular wall having at least one opening through to the inner tubular wall, the inner tubular wall lined with a microporous membrane;
  - placing each catheter in the organism so that the diffusion sections are located at the selected sites;
  - connecting each catheter proximal end to a manifold,
  - coupling the manifold to a pump for delivering the therapeutic agent to the selected sites; and
  - actuating the pump to deliver the therapeutic agent to the selected sites.
22. The method as recited in claim 21, wherein the catheter solid tubular section comprises a radio opaque material.
23. The method as recited in claim 21, wherein the catheter microporous membrane is located in the diffusion area.
24. The method as recited in claim 21, wherein the catheter microporous membrane further comprises, an outer area and an inner area, the outer area having an interference fit with the inner tubular wall.

25. The method as recited in claim 23, wherein the catheter microporous membrane further comprises, an outer area and an inner area, the outer area having an interference fit with the inner tubular wall.
26. The method of claim 21, wherein the pump is an implantable pump.
27. The method of claim 21, wherein the pump is an external pump.
28. A method of delivering a therapeutic agent to a selected site within an organism, comprising the steps of:
- identifying the selected site for delivering the therapeutic agent;
  - selecting a catheter the catheter comprising a tubular section having a solid section and a diffusion area, and an outer tubular wall and an inner tubular wall, the outer tubular wall having at least one opening through to the inner tubular wall, the inner tubular wall lined with a microporous;
  - placing the catheter in the organism so that the diffusion section is placed at the selected site;
  - coupling the catheter to a pump for delivering the therapeutic agent to the selected site; and
  - actuating the pump to deliver the therapeutic agent to the selected site.
29. The method as recited in claim 28, wherein the catheter solid tubular section comprises a radio opaque material.
30. The method as recited in claim 28, wherein the catheter microporous membrane is located in the diffusion area.

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31. The method as recited in claim 28, wherein the catheter microporous membrane further comprises, an outer area and an inner area, the outer area having an interference fit with the inner tubular wall.
32. The method as recited in claim 30, wherein the catheter microporous membrane further comprises, an outer area and an inner area, the outer area having an interference fit with the inner tubular wall.
33. The method of claim 28, wherein the pump is an implantable pump.
34. The method of claim 28, wherein the pump is an external pump.
35. A method of delivering a therapeutic agent to selected sites within an organism, comprising the steps of:
- identifying the selected sites for delivering the therapeutic agent;
  - selecting at least two catheters each having a proximal end and a distal end, and a solid section and at least two diffusion sections, the diffusion sections longitudinally aligned from the distal end corresponding to the selected sites;
  - placing each catheter in the organism so that the diffusion sections are located at the selected sites;
  - connecting each catheter proximal end to a manifold,
  - coupling the manifold to a pump for delivering the therapeutic agent to the selected sites; and
  - actuating the pump to deliver the therapeutic agent to the selected sites.
36. The method as recited in claim 35, wherein the catheter diffusion sections are microporous membrane sections.

37. The method as recited in claim 36, wherein the catheter diffusion section further comprises, a first end and a second end, the first end and second end coupled to the solid section forming a continuous cross section of the tubular section.
38. The method as recited in claim 35, wherein the catheter solid tubular section comprises a radio opaque material.
39. The method as recited in claim 35, wherein the catheter tubular section further comprises, an outer tubular wall and an inner tubular wall, the outer tubular wall having at least one opening within the diffusion sections through to the inner tubular wall, the inner tubular wall lined with a microporous membrane.
40. The method as recited in claim 39, wherein the catheter microporous membrane is located at the diffusion sections.
41. The method as recited in claim 39, wherein the catheter microporous membrane further comprises, an outer area and an inner area, the outer area having an interference fit with the inner tubular wall.
42. The method as recited in claim 40, wherein the catheter microporous membrane further comprises, an outer area and an inner area, the outer area having an interference fit with the inner tubular wall.
43. The method of claim 35, wherein the pump is an implantable pump.
44. The method of claim 35, wherein the pump is an external pump.